# Rambling Through Robinson

## An Account of the Home of the Department of Mechanical Engineering

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Airplane engines, Diesel engines, steam engines, tanks, pipes, valves, full size airplanes, and a conglomeration of machinery that would send a machinist into spasms of delight . . . this is Robinson Laboratory.

All this equipment is housed in a low, rambling, red-brick building directly across the quadrangle from the only-too-well-known Chemistry building.

Suppose we take a short trip through it and see what we can see. Upon opening the door, the most striking thing that comes to our attention is the large size of the room that we have entered. Extending practically the entire length of the building and rising to the full two-story height, the large central room seems to be swept clean of everything. But then, upon a quick second glance we see equipment literally lining the wall on every side. Even a full size airplane can be seen in the rear of the building hanging from the ceiling at about the same level as the second floor balcony. This balcony is built along the east, south, and west walls of the building. Extending from it are most of the classrooms.

Next, we notice on our right as we step into the lab, an interesting-looking machine that turns out to be a Worthington air-compressor. It stands about nine feet above the concrete floor. A few feet farther on, is a Westinghouse steam turbine that has been cut away showing its fifteen stages of blades. Originally used to drive a generator in the University power plant, the turbine, which was based down through the building to solid ground, was cut loose from its foundation by an acetylene torch and moved to Robinson Lab.

Bearing to the right, through a maze of pipes and machinery, we see at our feet a deep well of water. In fact, underneath the steel grating that is the floor of this part of the building, several rectangular, reinforced-concrete tanks, capable of holding approximately 30,000 gallons of water each, can be seen. This water is used in various experiments performed by students and faculty. When not in use, this water is stored either in the tanks in the building or pumped through pipes to the pond behind Brown Hall.

A typical experiment now being undertaken by one of the professors in the department, is the calibration of orifices used for measurement of steam and water flow. The object is to find the amount of water that passes through a certain size orifice under various pressure. This is done by actually testing the full size equipment. The water from the tanks under the floor is pumped above the floor level by a Worthington centrifugal pump that is driven by a steam engine. This steam engine has a very interesting history. Called the Buckeye Vertical Cross-Compound steam engine, it was originally used in the municipal lighting plant of Columbus. When it was in use there, V-belt pulleys had not yet been developed; instead, it had an 18-rope drive. That is, what would ordinarily have been the main pulley, was grooved with places for 18 ropes to fit over the wheel. The engine was purchased as scrap for only five hundred dollars. It was repaired and is now working very satisfactorily. The two-cylinder engine develops a maximum of 350 horsepower and drives the pump at 240 r.p.m.

Another small centrifugal pump is located in the vicinity, having a maximum speed of 1750 r.p.m.

Near the right wall is a lineup of five steam engines, the largest having the title of Chuse Horizontal Poppet Valve steam engine. It develops 46 horsepower. The only vertical engine, in this group of five, is the Westinghouse Standard, developing 31 horsepower. Several of these engines have pony brake attachments to measure the horsepower.

Near the steam engines is the Kerr steam turbine that runs a direct current generator at 3000 r.p.m. This generator has connected to it, an instrument called a vibration meter. Rectangular in shape, it has a row of little square rods calibrated to a scale. Each rod will vibrate at only a certain frequency. Thus, as the generator increases speed, its vibration can be determined quite easily.

Continuing to the right, we pass through a door marked Boiler Room. We are greeted by two large boilers and three furnaces, towering to the ceiling. One is a water tube boiler, and the other is a fire tube boiler, which means that the former has water-filled tubes surrounded by fire, and the latter is just the reverse. Also in this room is a boiler from an old railroad engine. Up to a few years ago, this boiler was fired as was the other two. But it was suspected that it was no longer safe, so the boiler was cut open to show its interior construction. It was found after the

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"operation" that fourteen stays were corroded completely through.

Two automatic gas heating units for private homes as well as two small and one large furnace for steam heating systems are found beside the large boilers.

From this room we circle back into the main large room through another door and find ourselves near the machine shop, located in the approximate center of the building. Much of the experimental equipment for the lab is made in this shop.

Walking past the machine shop and around the corner, we run into a very unique Diesel engine. It is really only a semi-Diesel. This type engine was used extensively in oil fields where the fuel was easily obtained. The interesting feature of this engine is the fact that it must be heated with a torch before it will even start. Of course, once it is started the heats of compression and explosion keep it going.

Continuing along the north wall, a Foos stationary Diesel engine is encountered. This Diesel is so large that it was necessary to put in special reinforced flooring before it could be installed.

As we walk on towards the rear, we see a wind tunnel and beside it a mine fan and conduit about twenty feet long. This is the newest piece of equipment in the building. It is used in the air-conditioning systems in mines.

In the extreme rear are two automobiles used in experiments in the automotive course. The equipment includes a dynamometer upon which the cars can be driven.

Turning around and returning in an easterly direction, we see, hidden under one of the stairs leading to the balcony several museum pieces of interest. One, an old Otto, silent gas engine used as the power plant of the University years ago. It was located in the basement of University Hall. The other is an Otto and Langen Free Piston engine. This engine was one of the first internal combustion type engines ever built. It was brought back from Germany by a member of the faculty. The power from this one-cylinder job was derived from the fall of the piston due to gravity and not from the explosion of the gas which was used only to raise the piston the full height of the cylinder.

Past the stairs along the right wall opposite the tool room are several automotive and aeronautical engines. Among these can be found an old twelve-cylinder Liberty aircraft motor that was made in 1918.

Of course, this is by no means a complete account of all the M. E. equipment in Robinson Lab. If the reader is interested in more details we suggest he enroll for the regular curriculum in mechanical engineering.

Editor's Note: Mr. Weisenberg is nominated honorary chairman of the M. E. Department Chamber of Commerce.


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